

Combating Infant Mortality

Perinatal Periods of Risk Analysis

2000-2002 Birth Cohort

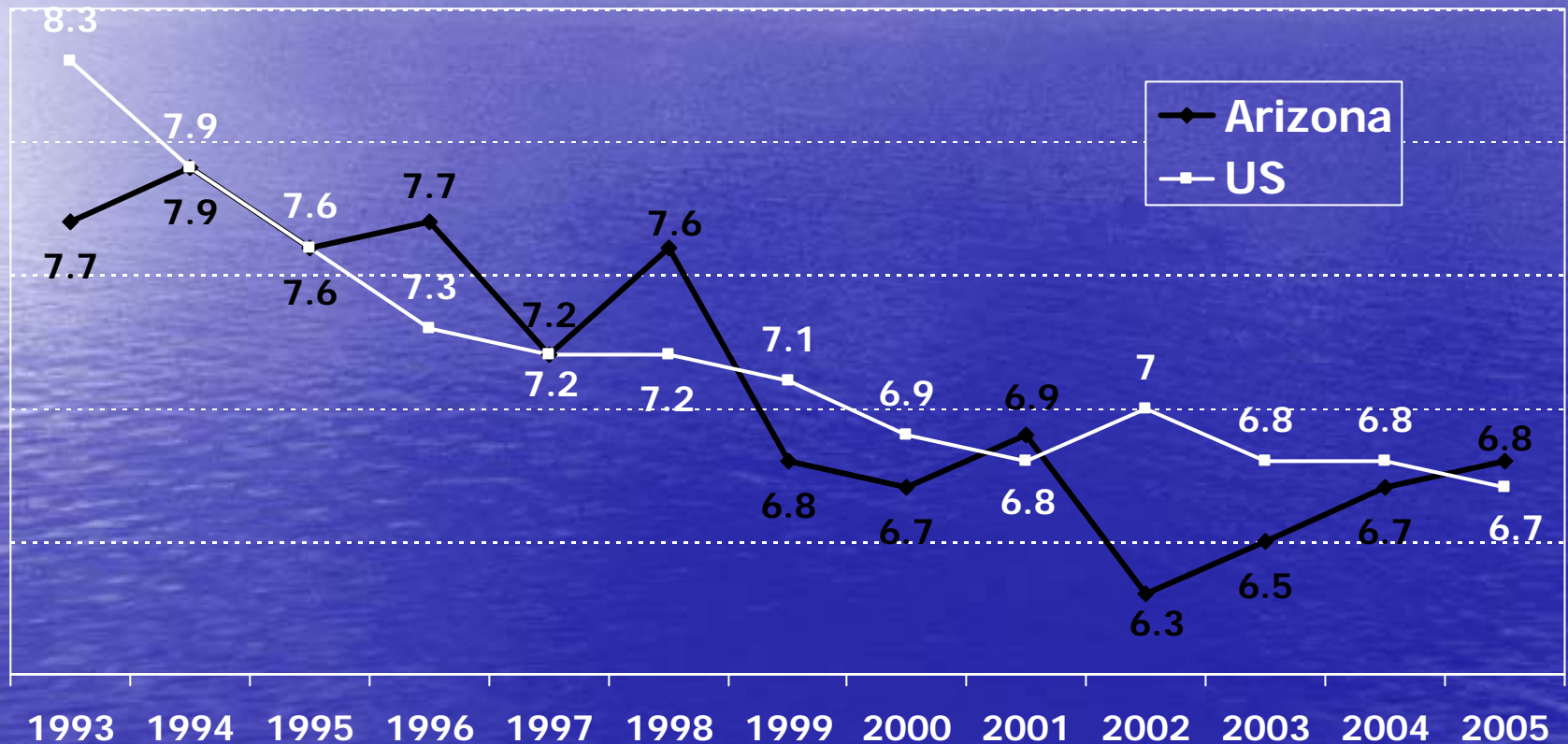
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Infant Deaths per 1,000 Live Births

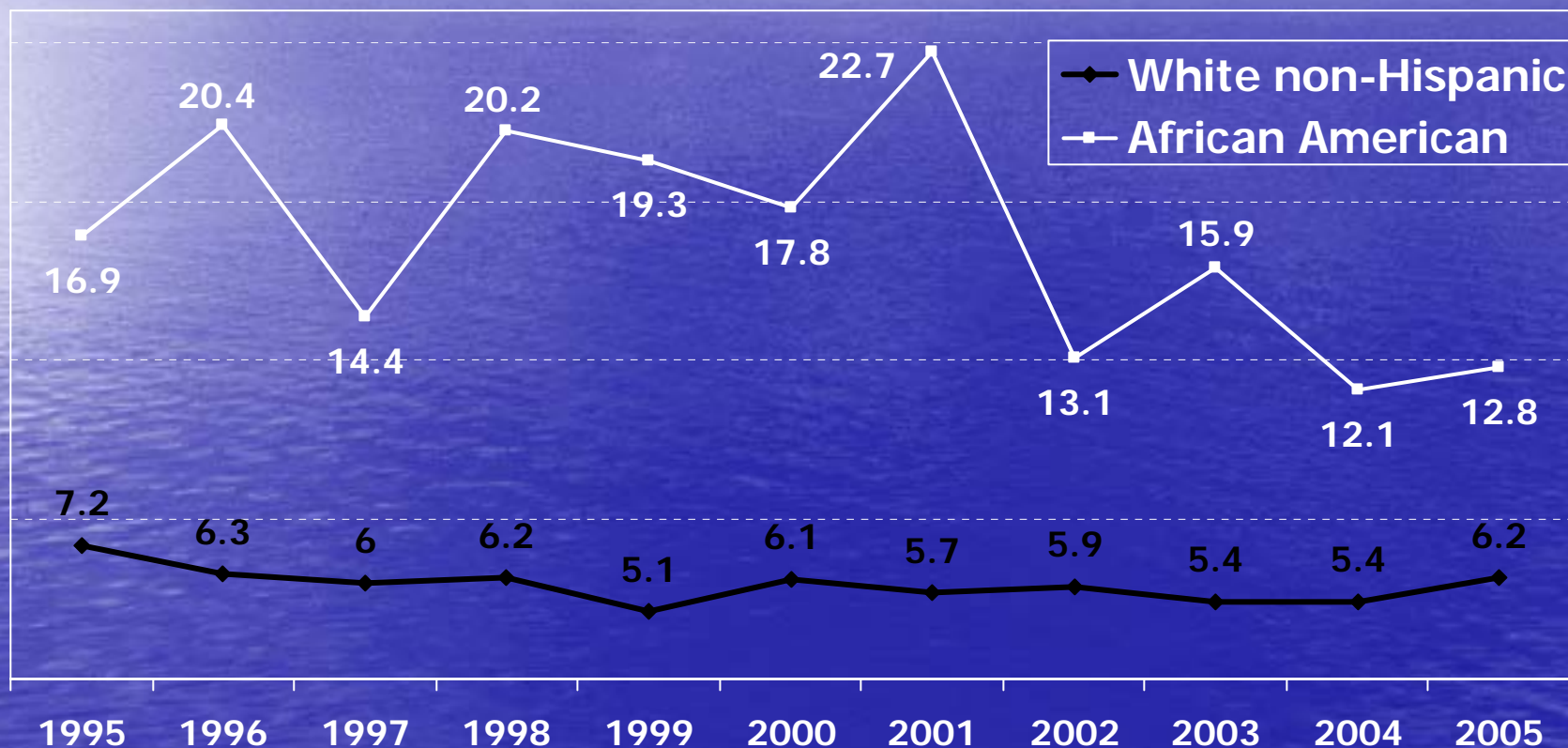


Source: Arizona Health Status and Vital Statistics, 2005

Mortality Rates

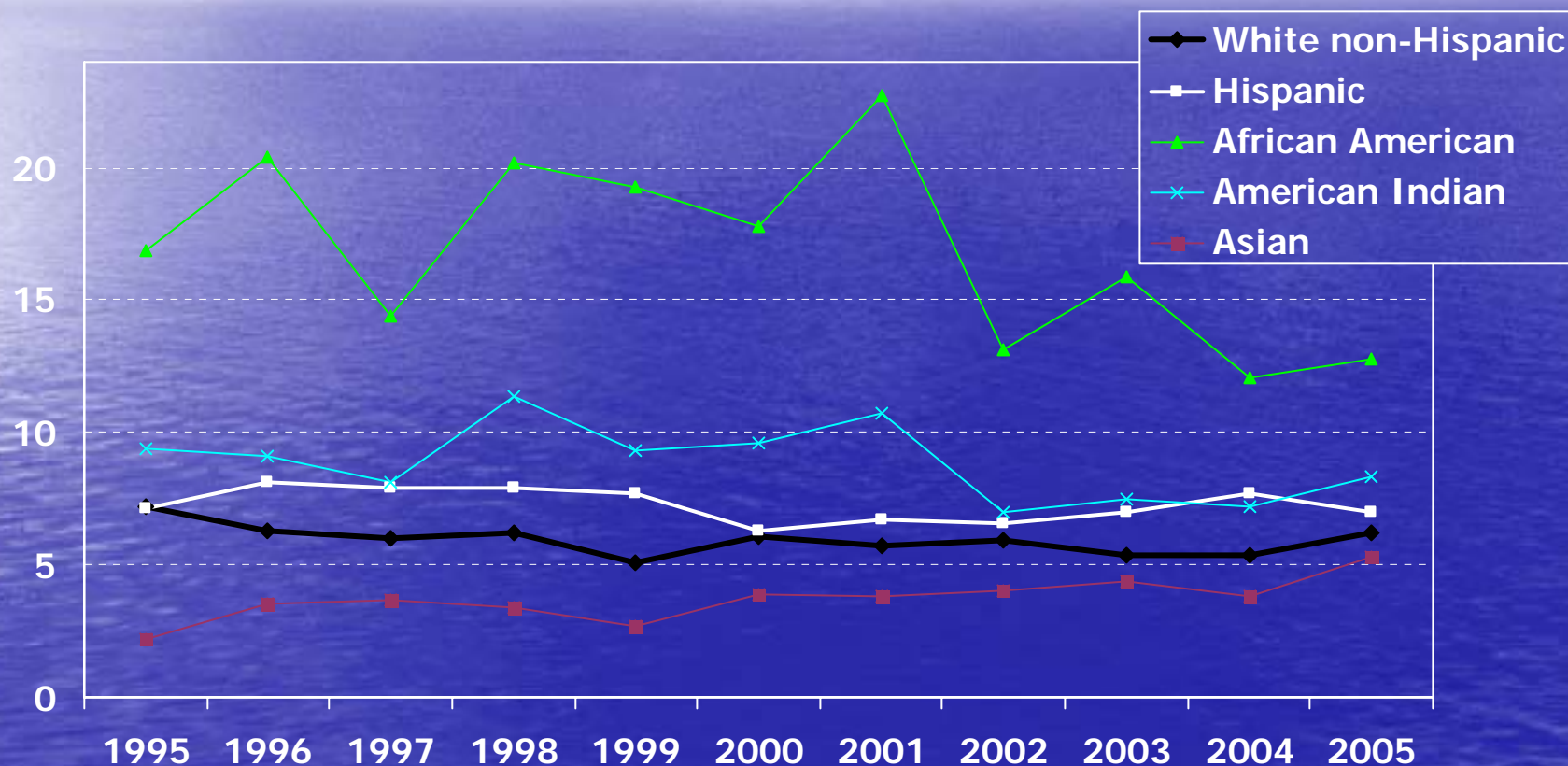
- Infant mortality
 - First year of life
- Neonatal
 - Birth through 27 days
- Post-neonatal
 - From 28 through 365 days
- Perinatal mortality
 - Neonatal deaths + fetal deaths

Black/White Disparity (per 1,000 Live Births) Arizona 1995-2005



Source: Arizona Health Status and Vital Statistics, 2005

Infant Mortality Rates by Race/Ethnicity (per 1,000 Live Births) Arizona 1995-2005



Source: Arizona Health Status and Vital Statistics, 2005

Perinatal Periods of Risk (PPOR)

- Widely used by health departments and supported by CDC, March of Dimes, WHO, and CityMatCH
- Used to identify potential opportunity gaps between population groups
- Used to guide further investigations and focus prevention efforts.

Perinatal Periods of Risk (PPOR)

- Method for identifying excess infant mortality
- Strategically targeting interventions to reduce disparities.

Assumptions

- Not all deaths are preventable
- Identifies excess deaths by comparing death rates among subgroups to a reference group known to have good birth outcomes.

Arizona Reference Group

- In general, rates tend to be lower for white, well-educated women between the ages of 20-35
- In Arizona, the reference group chosen was White, non-Hispanic women, with at least 13 years of education, who are at least 20 years of age at time of delivery.

Perinatal Periods of Risk Analysis

- Attributes fetal-infant deaths to periods of risk depending on birth weight and age at time of death
- Target interventions corresponding to periods with the most excess deaths.

Map of Feto-Infant Mortality

Birth weight in Grams	Age at Death		
	Fetal death	Birth - 27 th day of life	28 th - 365 th day of life
	Maternal Health /Prematurity		
Under 1,500 grams	Maternal Health /Prematurity		
1500+ grams	Maternal Care	Newborn Care	Infant Health

Map of Feto-Infant Mortality

Birth weight in Grams	Age at Death		
	Fetal death	Birth - 27 th day of life	28 th - 365 th day of life
	Maternal Health /Prematurity		

Map of Feto-Infant Mortality

Age at Death

Birth weight in Grams		Fetal death		
	1500+ grams	Maternal Care		

Map of Feto-Infant Mortality

		Age at Death	
Birth weight in Grams		Birth - 27 th day of life	
1500+ grams			Newborn Care

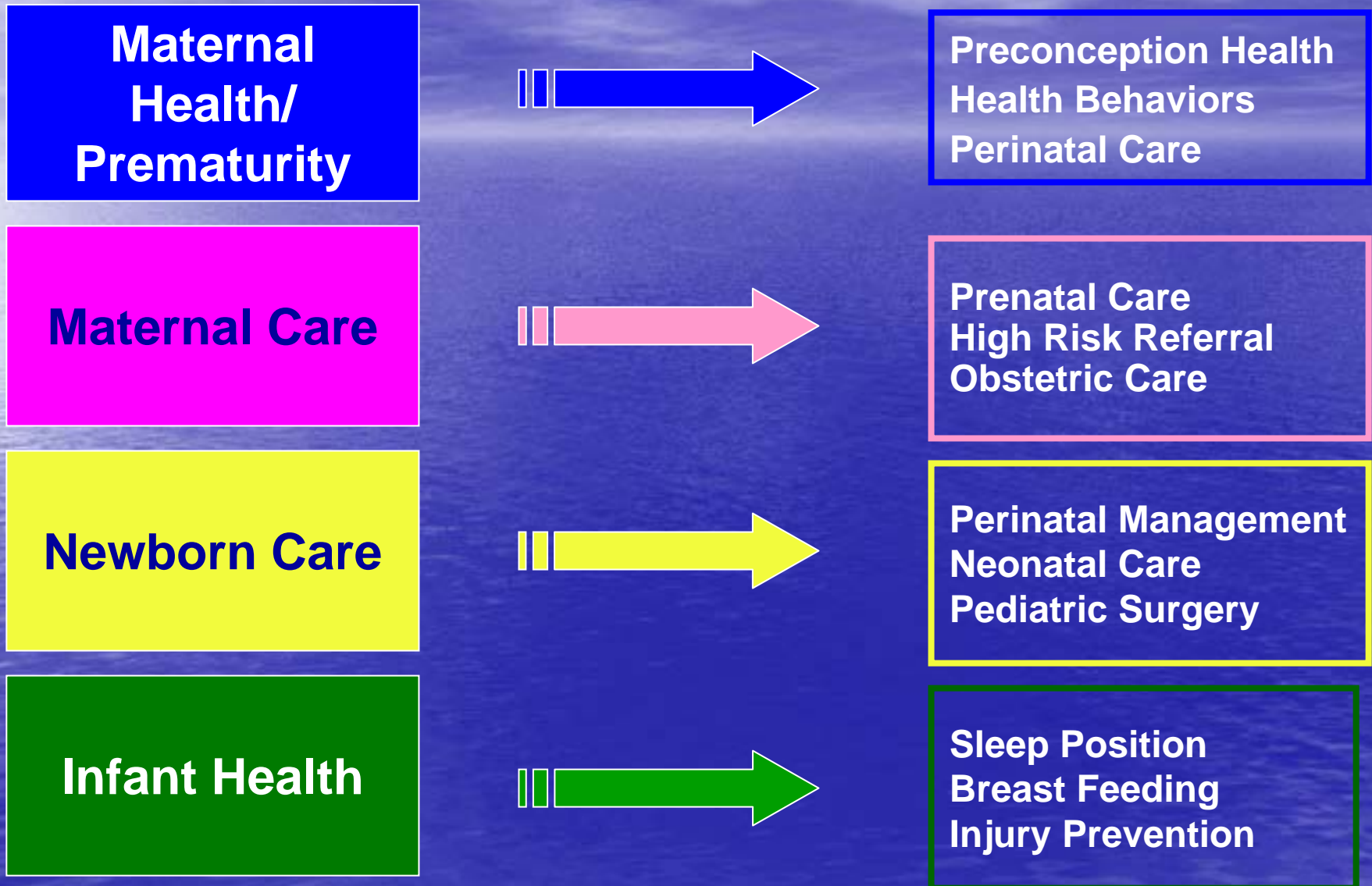
Map of Feto-Infant Mortality

		Age at Death		
				28 th - 365 th day of life
Birth weight in Grams				
	1500+ grams			Infant Health

Preventable Deaths

- Excess death rate is calculated by comparing mortality rates to reference group
- Calculation is done within each category to associate deaths with specific periods of risk
- Target prevention activities based on which period accounts for most excess deaths.

From Data to Potential Action



Maternal Health Period

- General health of women of childbearing age
- Health behaviors
 - Nutrition
 - Physical activity
 - Substance use (smoking, alcohol and other drug use)
- Family planning, birth spacing
- Perinatal care

Maternal Care Period

- Early and continuous prenatal care
- Risk assessment and management of high-risk pregnancies
- Good medical management of diabetes, seizures, and post-maturity and other medical problems
- Ensure women deliver at risk-appropriate facilities.

Newborn Care Period

- Advanced neonatal care
- Treatment of congenital anomalies
- Perinatal management
- Pediatric surgery

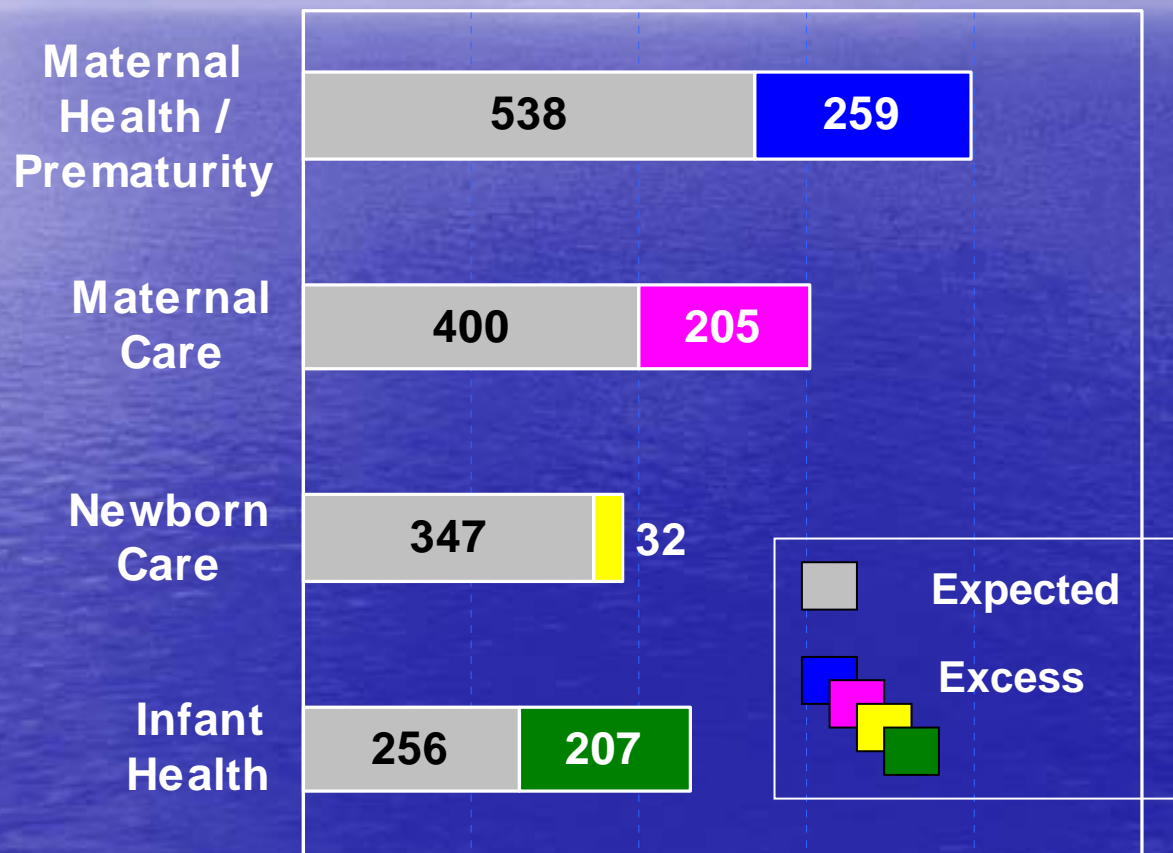
Infant Health Period

- Injuries and illness
- SIDS
- Sleep position
- Breastfeeding
- Access to medical home



Results of PPOR Analysis for 2000-2002 Birth Cohort

Model estimates that 31% of fetal and infant deaths in Arizona were preventable



Total n=2,245

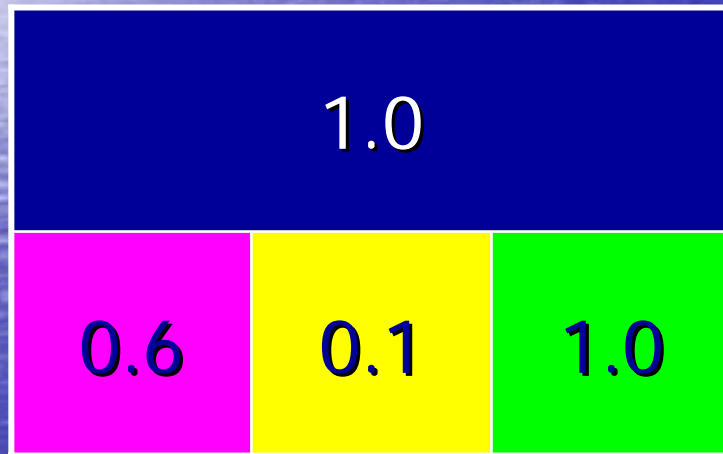
Source: Arizona Perinatal Periods of Risk Analysis, 2000-2002 Birth Cohort

AZ PPOR 2000-2002 Non-Hispanics

- Total Fetal-Infant Deaths: 1,300
- PPOR model estimates that 31 percent of deaths were excess (n=409).

AZ PPOR 2000-2002 Non-Hispanic Estimates

Excess Death Rate = 2.7



Excess Deaths = 409



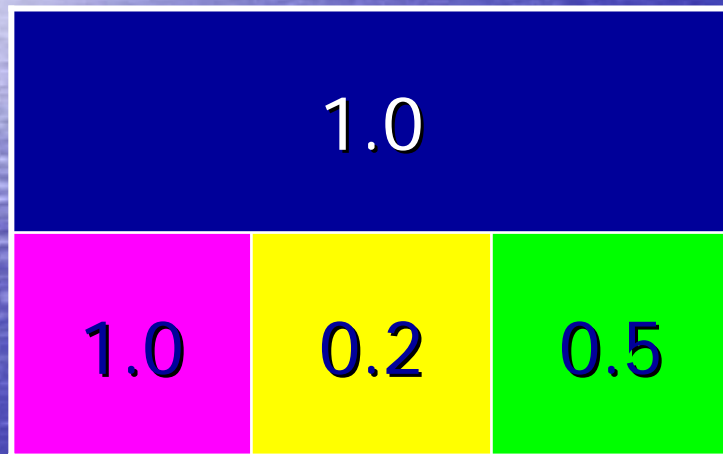
■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

AZ PPOR 2000-2002 Hispanics

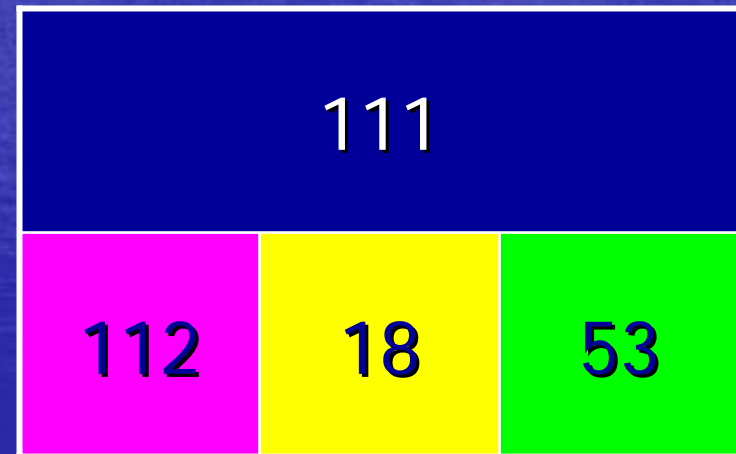
- Total Fetal-Infant Deaths: 945
- PPOR model estimates that 31 percent of deaths were excess (n=294).

AZ PPOR 2000-2002 Hispanic Estimates

Excess Death Rate =2.7



Excess Deaths =294



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

Source: Arizona Perinatal Periods of Risk Analysis, 2000-2002 Birth Cohort

AZ PPOR 2000-2002 African Americans

- Total Fetal-Infant Deaths: 125
- PPOR model estimates that 61 percent of deaths were excess (n=76).

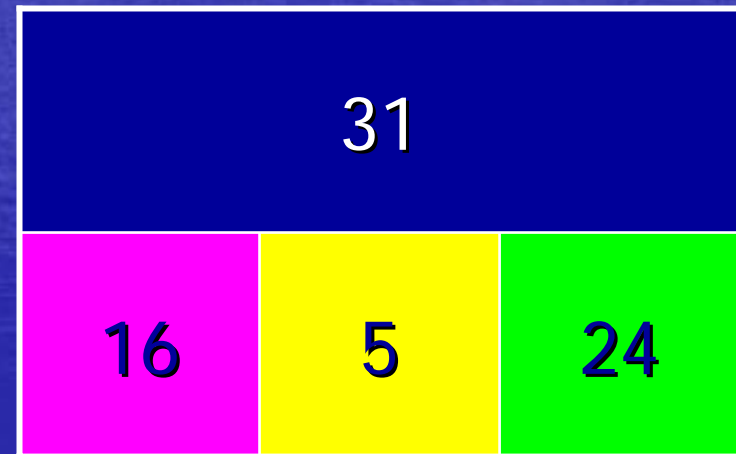
AZ PPOR 2000-2002

African American Estimates

Excess Death Rate =9.3



Excess Deaths =76



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

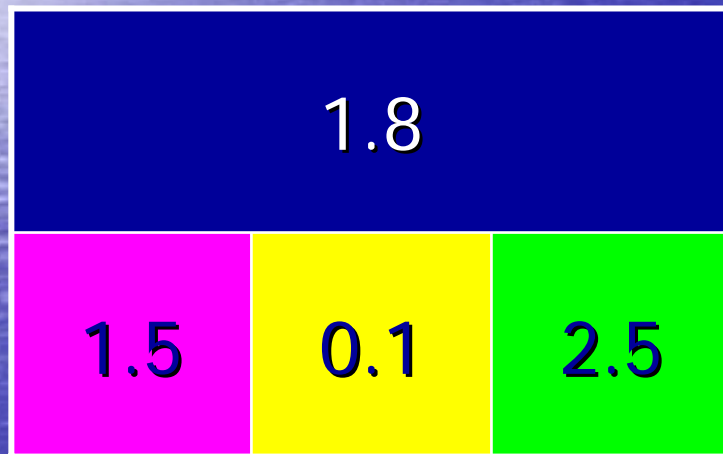
Source: Arizona Perinatal Periods of Risk Analysis, 2000-2002 Birth Cohort

AZ PPOR 2000-2002 American Indian

- Total Fetal-Infant Deaths: 200
- PPOR model estimates that 50 percent of deaths are excess (n=99).

AZ PPOR 2000-2002 American Indian Estimates

Excess Death Rate = 5.9



Excess Deaths = 99



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

AZ PPOR 2000-2002

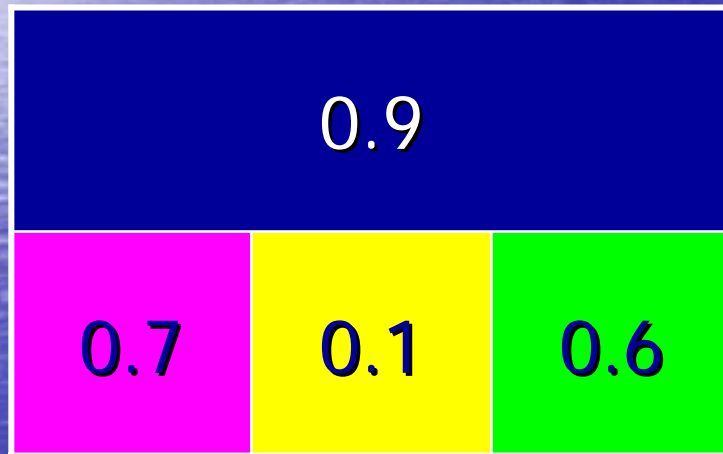
White

- Total Fetal-Infant Deaths: 1,847
- PPOR model estimates that 28 percent of deaths were excess (n=515).

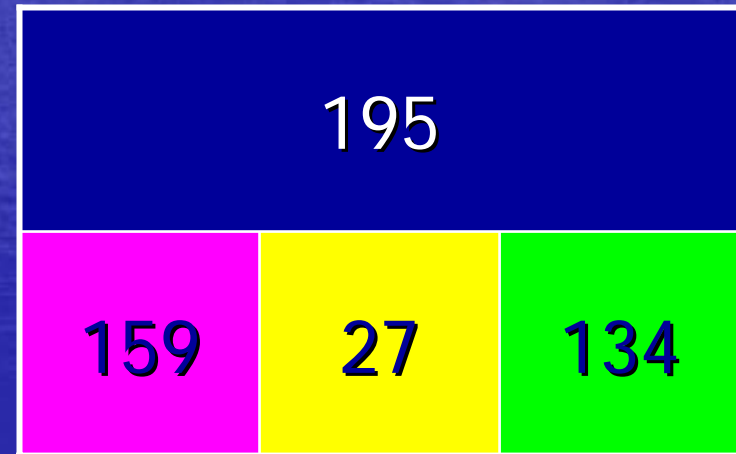
AZ PPOR 2000-2002

White Estimates

Excess Death Rate = 2.3



Excess Deaths = 515



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

AZ PPOR 2000-2002

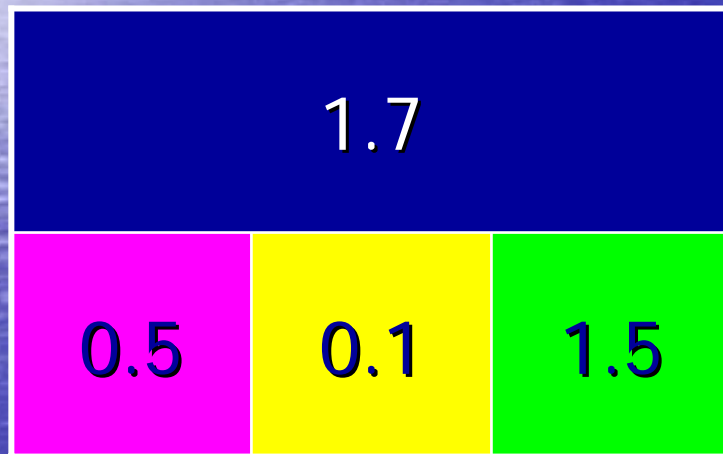
Under 20 Years

- Total Fetal-Infant Deaths: 345
- PPOR model estimates that 38 percent of deaths are excess (n=133).

AZ PPOR 2000-2002

Under 20 Years Estimates

Excess Death Rate = 3.7



Excess Deaths = 133



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

AZ PPOR 2000-2002

36 Years and Over

- Total Fetal-Infant Deaths: 261
- PPOR model estimates that 50 percent of deaths are excess (n=130).

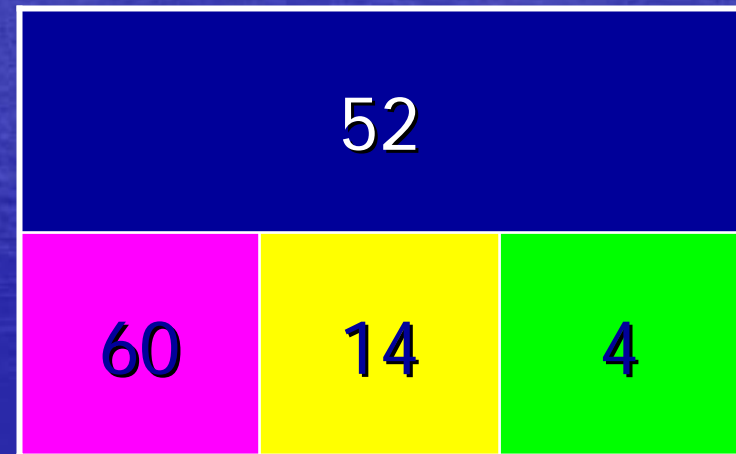
AZ PPOR 2000-2002

36 Years and Over Estimates

Excess Death Rate = 6.0



Excess Deaths = 130



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

AZ PPOR 2000-2002

Less than 13 Years of Education

- Total Fetal-Infant Deaths: 1,512
- PPOR model estimates that 40 percent of deaths are excess (n=604).

AZ PPOR 2000-2002

Less than 13 Years of Education Estimates

Excess Death Rate = 4.0



Excess Deaths = 604



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

AZ PPOR 2000-2002

13 or More Years of Education

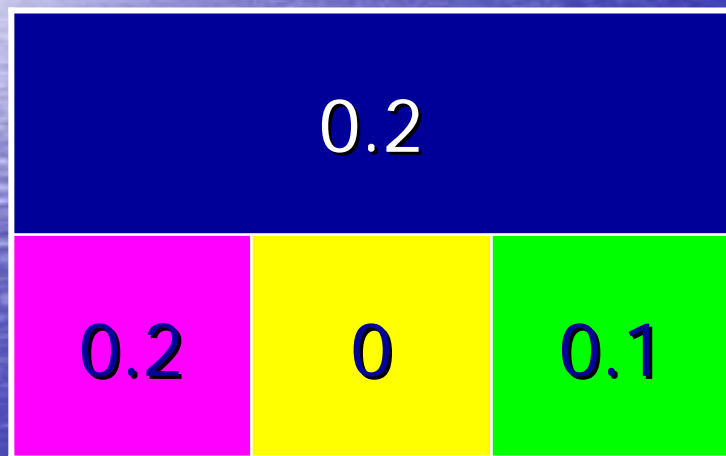
- Total Fetal-Infant Deaths: 648
- PPOR model estimates that 8 percent of deaths are excess (n=49).

AZ PPOR 2000-2002

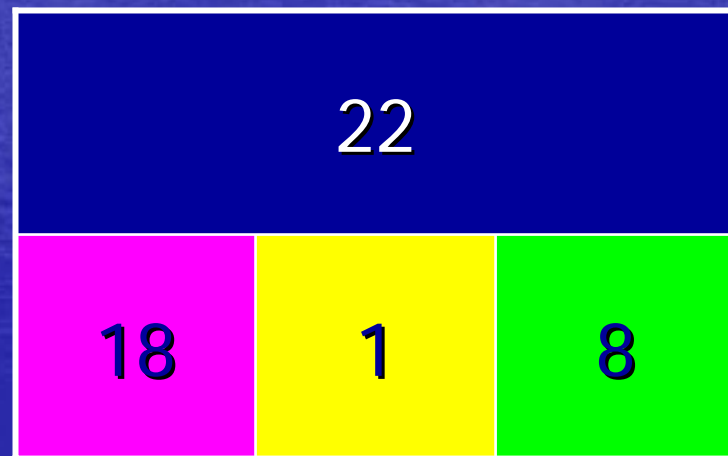
13 or More Years of Education

Estimates

Excess Death Rate = 0.5



Excess Deaths = 49



■ Maternal Health/Prematurity ■ Maternal Care ■ Newborn Care ■ Infant Health

Summary of Excess Death Rates

AZ PPOR 2000-2002

	Maternal Health	Maternal Care	Newborn Care	Infant Health	Total
White	0.9	0.7	0.1	0.6	2.3
African American	3.8	2.0	0.6	2.9	9.3
American Indian	1.8	1.5	0.1	2.5	5.9
Hispanic - All Races	1.0	1.0	0.2	0.5	2.7
Non-Hispanic - All Races	1.0	0.6	0.1	1.0	2.7
<20 years old	1.72	0.45	0.06	1.51	3.7
20-35 years old	0.7	0.6	0.1	0.7	2.1
36 or more years old	2.39	2.74	0.62	0.20	6.0
≤ 12 years education	1.4	1.2	0.1	1.3	4.0
13+ years education	0.2	0.2	0.0	0.1	0.5

Source: Arizona Perinatal Periods of Risk Analysis, 2000-2002 Birth Cohort

Summary of Excess Deaths

AZ PPOR 2000-2002

	Maternal Health	Maternal Care	Newborn Care	Infant Health	Total Excess
<20 years old	61	16	2	54	133
20-35 years old	143	122	16	149	430
36 or more years old	52	60	14	4	130
≤ 12 years education	217	176	20	190	604
13+ years education	22	18	1	8	49
White - All Ethnicities	195	159	27	134	515
African American - All Ethnicities	31	16	5	24	76
American Indian - All Ethnicities	31	25	1	42	99
Hispanic - All Races	111	112	18	53	294
Non-Hispanic - All Races	148	93	13	154	409

Source: Arizona Perinatal Periods of Risk Analysis, 2000-2002 Birth Cohort

Now What?

- These are the groups we should be focusing on in Arizona:
 - African Americans
 - Teens
 - Older women
 - Women with less than 13 years of education
 - American Indians
- These are the periods we should be focusing on in Arizona:
 - Maternal health/prematurity
 - Maternal care
 - Infant health

What Are We Doing to Address This at ADHS?

- Black Nurses Association
- Teen pregnancy prevention
- Family planning services and preconception health for African American women
- Preconception health

Sources

- Arizona Department of Health Services. Public Health Services. *Arizona Health Status and Vital Statistics*. Phoenix, AZ: Arizona Department of Health Services, 2005.
- PPOR "How To Do" Workshop Materials. Available at: <http://www.citymatch.org/>

Thank You!

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